

To be understood, universities must plan

A study, *Planning for Planning*, prepared for the Association of Universities and Colleges of Canada by its advisory committee on university planning, with financial assistance from the Ford Foundation, conveys this message in its summary:

"Public criticism of universities results from the absence of consensus about what universities should be and what purposes they should serve. Universities, however, cannot be effective or accountable unless their goals are understood by themselves and by the public that supports them through government grants."

"Universities and governments must agree about what these goals should be and this agreement can only be reached by proper long-term planning involving both parties. Such planning does not yet exist but the time is right to establish agreed processes for planning between universities and governments."

"The study was undertaken because of the lack of well-defined and systematic processes for exchanging information and examining basic assumptions with governments. Its concern was the interaction of universities and governments in the planning of the universities in the longer run;

its objective to develop guidelines for establishing processes for effective long-term planning. The study took a year to complete."

Chairman of the committee was A.W.R. Carrothers, past-president of the AUCC and of the University of Calgary and now president of the Montreal-based Institute for Research on Public Policy. Principal author of the study was Bernard Trotter, head of the office of academic planning at Queen's University.

Copies of the study are available at \$2.50 each from the AUCC Publications Office, 151 Slater St, Ottawa K1P 5N1.



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Two U of T zoologists — Profs. William Friend (top right) and Stephen Tobe (bottom right) — are in a war against the tsetse fly, a specimen of which is in the picture above. The insect, on a man's arm, was bred in a laboratory, has not been in contact with animals having the protozoan that causes sleeping sickness, and therefore could not infect the man.

War on tsetse fly zoologists in action

Three Toronto scientists have declared a biological war against the African tsetse fly, carrier of a sleeping sickness that infects people, and a similar disease called Nagana, which strikes domestic cattle.

Two of the scientists, Profs. William Friend and Stephen Tobe, are zoologists at the University of Toronto, while the third, Prof. Ken Davey, is chairman of biology at York University.

The three men make up the most significant tsetse fly research unit in North America and one of the major groups in the world attempting to find a way to control tsetse fly populations. These are found primarily in central Africa, extending from coast to coast.

A million people infected

"Latest estimates are that about one million people are infected with sleeping sickness," says Prof. Tobe. "It has also had a harmful effect on cattle farming." Tsetse, in fact, means destroyer of cattle in the Shilomo language.

The disease is caused by a protozoan (trypanosome) which lives in the blood. This protozoan infects the nervous and lymphatic

systems of people and cattle, producing lethargy, high fever, and — quite often — death. Wild animals, however, carry the protozoan in their blood with no ill effects.

Even today, the tsetse fly is keeping areas in central Africa completely free of man and his cattle.

Spraying insecticide useless

Part of the difficulty in killing the tsetse fly can be attributed to the low population density of the area — about two adults per square mile. This makes spraying insecticide — an effective method of control with some insect species — useless for curbing tsetse fly populations. To complicate matters even more, the tsetse fly is a biological peculiarity, say zoologists. The female gives birth to a single larva; this larva, while in the mother, receives all its food from milk glands.

"Essentially, the mother can be thought of as a funnel," says Prof. Tobe, "which converts human and animal blood into milk for the larva. Once the female gives birth to the female gives birth to a larva, which immediately burrows into the

ground and emerges as an adult 30 days later. Once the larva is born it doesn't require any food."

U of T research is aimed at disrupting the reproductive system of the tsetse fly in some way. Since the larva is twice the weight of the mother when it is born, female tsetse flies lead a precarious existence, says Prof. Tobe.

Prof. Friend is attempting to develop an artificial diet that would mimic vertebrate (human and animal) blood. He explains that by manipulating this artificial diet scientists may be able to work out the food requirements of the tsetse fly and eventually interfere with such things as its digestive processes.

Would advance cattle farming

"Control of the tsetse fly would open up vast areas of agricultural land for cattle farming," says Prof. Friend. "Africa is the most protein deficient region in the world."

Although his research is partly supported by National Research Council funds, Prof. Friend says: "It is sometimes extremely difficult in this country to get financial support for foreign insect research."

The *Bulletin* will not be published next week. Deadline for 'Events' notices to appear in the next regular issue, (Feb. 28), is Feb. 21.

Nominations close today in GC vote

Nominations close at noon today for the election to fill seven teaching staff and eight student seats on the 1975-76 Governing Council. The election will be by mail ballot, beginning March 14 and closing at 12 noon March 27.

David Warren, chief returning officer, has reminded candidates of the guidelines for the placement of campaign posters. They are not to be posted until after nominations close and then only on inside and outside bulletin boards or, if necessary, on any non-painted interior surface provided that glue is not used. Posters are not to be affixed to the outside of buildings, building identification signs, mirrors, windows or glass areas, such as see-through doors, or to trees.

As there are no outside notice boards at Eindale College, posters there are to be posted on appropriate places inside buildings. At Scarborough College, candidates are asked to use wooden "hanging rails" provided throughout the college and not to attach posters directly to walls.

"If these guidelines are not followed," Mr. Warren says, "it is likely that posters will be removed."

Writing good English

One of the major chartered accountancy firms in Toronto now gives remedial English courses to university graduates it hires, says Prof. Harry Eastman, chairman of Political Economy. "Many of these university graduates would come from the U of T," he added, responding to a question about whether the writing skill of university students has declined in recent years.

Other faculty members had differing opinions.

"I wouldn't say so," said Prof. Tony Naldrett, geologist and editor of the Journal of Petrology, published by the Oxford University Press. "The quality of written English during the last eight years or so seems to be staying at the same, or even a standards."

Prof. John Bell, Department of English at Victoria College, disagreed: "I think it is fair to say that there is a general feeling among my colleagues that the standard of writing has fallen during the last several years. For the first time our college has recommended to students the purchase

of a particular handbook in English grammar as a text."

Prof. Michael Marmos, History, said: "I have a sense that the writing is bad but at U of T at least things seemed to have remained at an even level during the last six or seven years. I'm suspicious, however, of people who shoot from the hip on this subject."

There was general agreement, among the faculty members interviewed, that although standards in writing are low, a small minority of students could indeed write well. But it appears that recent reports in newspapers are not grossly exaggerated when they say a substantial number of high school and undergraduate students have difficulty writing a sentence.

"Students have problems with sentence structure; they have a pitifully limited vocabulary, and they commit many spelling errors," said one professor.

Complaints about the poor

Continued on Page 3

Students' summer opportunities

Students looking for summer jobs, study, travel, self-employment, or volunteer work, should read *What can I do this summer?*

The revised and expanded 1975 edition of this handy booklet published by the Faculty of Education Guidance Centre gives up-to-date information on the opportunities open to students during their summer holidays.

What can I do this summer? contains information on how to find jobs and what employees are looking for in workers, self-initiated enterprises, and gives a list of addresses of non-profit organizations which offer further information. Booklets are \$1 each (cheaper in quantity). Orders or enquiries should be directed to the Faculty of Education Guidance Centre, 1000 Yonge St. (928-3206).

A boom for oil spills

SEE PAGE 3

CAMPUS FORUM

Prof. D.G. Andrews, Chemical Engineering and Applied Chemistry, has written the following letter to the Bulletin. The sub-headings have been inserted by the Bulletin for typographical reasons.

When your Friday the 13th, December issue (not your unlucky number, I hope) was pushed under my door, the first thing that sprang into view was the heading "Scientists to assess nuclear disaster risks". The paper was loaded with clichés such as "the risks associated with nuclear energy production", "the catastrophic event with a low probability", "a Faustian bargain on society", "a number of perilous risks", "sabotage, theft and terrorism", "hear from concerned people", "the public's right to know", and so. I had the shivers all through the Christmas break. However, I knew all would be well, because the Bulletin would carry in its next issue a factual report on the faculty-public participatory conference which our Faculty (Applied Science) had just concluded, and in which we had gone through the problems of the onrushing energy shortage. As concerned people, we had considered what our expectations could be in the areas of fossil, solar, wind, tidal, geothermal, nuclear fission and fusion power. Conscious that the public had the right to know, we had supplied the media (including the *Bulletin*) with the necessary information. The response was very disappointing, to say the least. If it had not been for Lydia Dotto's short item in one Toronto daily, the coverage in the outside press would have been nil. The *Bulletin* printed nothing. [The *Bulletin* did not receive any information – the conference referred to above – EDITOR.]

Now I am sure you are anxious to gain (regain?) a reputation for fair and comprehensive reporting; therefore I make no apology for taking up your time with one or two suggestions as to how this might be done. Our December conference is, of course, stone-cold. But a golden opportunity to bring things into balance has fortuitously presented itself to you.

Manifesto of U of T's new Energy Probe

No doubt you have on your desk the manifesto of the University of Toronto's own and new Energy Probe. I presume it is "one of us" and approved by Governing Council, since it uses the title "Energy Probe, University of Toronto" and a telephone number on the University Centrex. Now in order that faculty who have the right to know should get to know, you could print selected Energy Probe pronouncements on one page and some counter-balancing quotations from other sources on the opposite page. But you could go one better. Why not just interleave them or interphase them – a sort of fold-in – folded, of course, in the proper rhetorical phraseology? Using [a] for Energy Probe and [b] for the rest of the world, you might end up with something like this:

[a] Current situation –

[b] Those on the other side, of course.

[a] Clear evidence of bumbling incompetence or of a deliberate attempt to mislead the Canadian public.

[b] Clear evidence that we are running short of energy at an increasing rate – faster than anyone realized – and that our scientists and engineers must have no obstacles placed in their way in their quest for solutions to the problems.

[a] Energy Probe will be asking difficult questions.

[b] In our Faculty, we find the questions quite easy. Anyone can ask them. But to answer them is more difficult. It takes time, brainpower, carefully-planned experiments, ingenuity, persistence, man-years and money. Even then, some problems remain unsolved.

[a] Energy Probe has a \$100,000 budget for 1975.

[b] Our Dean has had to turn down a request for another full-time staff member in our energy group, owing to shortage of funds. He may have to reduce staff next year.

[a] Speeches, conferences, publication of numerous articles, information packages and position papers, many visits with M.P.s, cabinet ministers and civil servants.

[b] None of these will do one thing to build a

pollution-free car, develop a cheap household solar power unit, estimate the environmental impact of a nuclear power system, design an improved reactor, or use the thorium-232 tail of those sand dunes in the Northern oil and gas, improve the safety of the CANDU reactor, develop new methods for isotope separation, develop new methods for the extraction of plutonium and the utilization of the million-odd tons of uranium-238 lying around, design improved and safe storage for radioactive wastes or set the scene for fusion power. All of these have been, and continue to be, immensely worried about by concerned members of our Faculty. Our motto is "res non verba". Some of us think we have a higher service – "terar dum prospic". Certainly we cannot waste our time yacking at street corners or arguing which end to crack eggs, even if there are enough of the latter in store to stretch from here to Thunder Bay.

[a] Exports of gas, oil and products using these should be restricted or stopped.

[b] Excellent, so long as the U.S. don't retaliate by stopping the supply of coal to Lakeview power station.

[a] The Government is doing nothing to encourage saving electricity.

[b] There are of course (among others) the radio exhortations, the TV shorts and the excellent Ontario pamphlet "Energy – A program for voluntary action", which

and putting craftsmen out of work.

[b] In our Faculty, we still cling to the old-fashioned idea that science and technology will remove the drudgery of back-breaking, soul-destroying, repetitive labour, solve problems of food and shelter, help everyone to raise their standard of life and enjoy more leisure and cultural activity. But it seems we are wrong. Ludd is not dead yet. Also, we have opened up a gap between the products of science and technology and people's ability to use them wisely.

[a] Pickering nuclear reactor fuel is busting up all over.

[b] So's the spring – or it will soon, hopefully.

Reviewing the expansion of public utilities

[a] Billion-dollar efforts of public utilities to double their capacity every ten years must be reviewed and revised in light of the impossibility [technical, financial and environmental] of sustaining such growth.

[b] It is so easy to become absorbed in the electricity problem that one can forget the thermal problem. Probe's NEB Gas Brief of August 1974 shows a graph, "Scenarios at a Glance", indicating a range of between 100 and 180 $\times 10^9$ BTU per year for the U.S. in 2000. Dividing by 10, we can get a very rough idea of the Canadian situation, that is, $10 \times 1.8 \times 10^9$ BTU/year. Now, 10,000 megawatts electrical power is equivalent to 36,000 megawatts of heat, or about 10^10 BTU/year. Rejection of 0.7 of this as low-grade waste heat and conversion of 0.3 to work and hence to electricity ("direct conversion" is still on the sidelines). It is easy to see that if our recoverable fossil supplies all went out by year 2000, and if we decided not to become slaves of OPEC, then at that time we should need an existing nuclear capacity of at least 1,000,000 MW thermal if delivered as "heat-engine" electricity, or 300,000 MW thermal if delivered as high-grade process, transport, district and domestic heat; that is, 150 or 50 Pickering if nuclear fusion were not available by then. Perhaps the best solution in that case would be to go straight to the hydrogen economy, using 300,000 installed megawatts thermal as the basis, sited within special safe complexes.

[a] Nuclear reactors create thermal pollution.

[b] Postulating direct conversion, this problem may eventually be solved. Otherwise, use the waste, low-grade heat on land, to prolong the growing season (all too short here).

[a] Nuclear energy involves horrendous potential hazards.

[b] In order to determine our future for thousands of millions of years, we are asked to accept nuclear hazards about one-thousandth those of other human activities. The alternative is collapse of our form of civilization. Choose.

Using the right aggressive terminology

This sort of thing could go on for weeks, but it certainly points up the fascination of conducting probes, and I have no doubt that the probe idea can (and will) be extended to other human activities. In order to effectively polarize situations and get a Donnybrook going, it is of course necessary to go out on a limb and use the right sort of aggressive terminology.

The trick is to word every statement or accusation in a way calculated to produce the most devastating effect (and there are many better at this than I). Soon, Toronto's fame will spread a broad and we will become the Probe Capital of the World. Prospective staff and students will have to prove themselves from moment to moment, or else be eliminated. Instead of the customary pongies, Butcher must catch in case someone gets a cold and spoils it all. There is a danger that one day some concerned and activist members may take over Governing Council (Yea, Virginia, there is a Santa Claus), shake out all the motley crew hiding in its voluminous petticoats, defrock the High Priests of Probe and send the whole lot packing. Then we would have to get back to the research and teaching for which we are paid by the people of Ontario.

Plaque marking site of capsule buried outside the John P. Roberts Research Library.

points out that alternate, more dependable forms of energy will take time to get, and that no one has the right to waste fuel or any other form of power. Some of its 47 recommendations hit home, such as No. 39: "Jack rabbit starts waste gas", or No. 41: "and do you really need such a large, powerful car?" A copy of this pamphlet should be mailed to every household in Canada. But like the "Save, Save, Save" ads, it is not the 20 per cent, you save which hurts. It is the 80 per cent, you pay. The daily drain goes on, bringing nearer the moment of truth: nuclear fusion if available, nuclear fission if not. As Editor Philip Abelson says of the U.S. (*Science*, January 10), "If the public spends many billions of dollars on storm windows and added insulation, one year's decay in the supplies of natural gas might be compensated for. In the meantime, we will have to enforce economies. Maybe each user will have an automatic switch which will cut off when the allotted quantity has been used, or excessive use will be charged at \$1 per unit. Conditioners will be declared illegal in Canada, and so on. Of course, this may cost votes.

[a] Hydro is swallowing up all the good land for rights of way.

[b] What with rapacious land-use for dwellings, roads and industry, soon the only unspoiled land where you can picnic, see a bird, play a game of softball with the kids or pick wild flowers will be the Hydro rights of way. Of course a solution to land-rape might be for everyone to stay home with Mom and Dad, sleep 10 to a room, sell their cars and refuse to buy manufactured goods.

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Want to remember? Don't hum that sound

If you hum a pattern of sounds after you hear it, you are less likely to remember the pattern later than if you don't hum. This surprising conclusion emerges from a study of long-term memory for sounds being carried out at Erindale College by Dr. Irwin M. Spigel.

In a series of experiments, students were asked to listen to either a three-tone or a five-tone sound pattern, and then, 24 hours later, to choose which of two same-length patterns was the one they originally heard. A third of the students listened to the initial pattern once only; a third listened to it 20 times; and a third were asked to hum the pattern after seconding it once.

Results of the experiment showed that the five-tone pattern was more easily remembered than the three-tone; that the 20 repetitions considerably improved subsequent recognition; and that those who hummed had the poorest recognition of the pattern on second hearing.

"Most work on memory has used verbal material," says Dr. Spigel, "and from that we antic-

ipated that three tones would be easier to remember than five tones and that humming after hearing would improve memory. Instead we found the opposite."

What is the explanation? "The improved memory for five tones may be a result of the greater structure — five tones are less ambiguous than three," says Dr. Spigel, "while the poor results after humming may be because most people are inaccurate in reproducing tonal patterns, and remembered the incorrect pattern which they hummed rather than the pattern which was played."

The experiments, however, raise more questions than they answer. What, for example, is the role of structure in memory of sound, if structure is involved? What is clear, says Dr. Spigel, is that memory for non-verbal material is different from memory for verbal material. Since theories of memory are based largely on verbal learning, this preliminary study suggests that we need some addition to the theories which will include the differences which the study has shown.



Special wooden deflector is put on a conventional oil boom to make it useful in stopping oil slicks from spreading on fast moving waters.



Hamilton Harbour Commission tugboat starts to pull the specially designed boom for tests in Hamilton harbour waters.

Special oil boom tested

University of Toronto scientists have recently tested a specially designed oil boom intended to effectively stop oil slicks from spreading on rivers.

Conventional oil floats, with their plastic foam floats and plastic skirts that penetrate the surface of the water, don't do a good job of stopping oil slicks in fast moving rivers. Where the flow of a river is more than two knots, the boom either breaks, or the oil slicks underneath.

Recovery of oil difficult

Since most major Canadian rivers flow faster than two knots, oil tends to gather in the middle of a conventional boom (which is strung across the river), making oil recovery attempts difficult.

For this reason Prof. Donald Mackay, associate professor, Department of Chemical Engineering and Applied Chemistry, and also associate director of the Institute for Environmental Studies, tackled the problem.

They decided that instead of putting an oil boom straight across a river, it would be better to place it diagonally. "This would move the oil slick from the middle of the river to its shore," explains Prof. Mackay, "and enable other recovery equipment such as the skimmer to be used."

The problem, of course, is to get the oil boom to stay at a diagonal position. The University of Toronto team used specially-made wooden deflectors to do the job.

The fixed-up oil boom was tested in Hamilton harbour because there is no river nearby.

"We could get the effect of a moving body of water by towing the modified boom," says Prof. Mackay.

The Hamilton Harbour Com-

mission supplied both the original oil boom, and a tug boat to pull the new version about.

Can now analyze the data

"We were delighted with the result, considering it was our first attempt," says Prof. Mackay. "We towed it fast enough to destroy it eventually, which happened at six knots. We didn't know if this would get detailed information, which we can now analyze."

Later this year, the team hopes to test the boom on the St. Clair River. Says graduate student George Greene: "The problems we still face include quick deployment of the deflector system and to judge at what angle to place these deflectors, which will depend on the conditions of a particular river."

However, scientists here believe the basic idea of the modified boom is a good one and can be made to work.

Members of the research team also included technicians Martin Kop and Jim Hassfeldt, and graduate students Len Brodsky, Paul Leinonen, and John Overall.

RESEARCH NEWS

RODA Summer Scholarships

Applications are available from ORA for summer scholarships under the research on drug abuse program. The original and two copies of completed forms should be forwarded through ORA by March 3. Successful applicants will be notified by April 1.

Connaught Fund Applications Received

A total of 65 research grant applications to the Connaught Fund were received by ORA in the deadline week. By departments of origin: 26 were received from the division of life sciences; 26 from physical sciences and engineering; 9 from social sciences; and 4 from humanities. Among the total, 13 applications are counted as eligible.

Search for new centre director

The Dean of the School of Graduate Studies has established a committee to recommend the appointment of a director for the new interdisciplinary Centre for Religious Studies. His term of office will be for five years. The committee consists of:

Dean R.A. Greene (Arts and Science), Associate Dean R.A. Spencer (SGS), J.E. Bruns (Religion).

Geology conference Feb 24 & 25

The Department of Geology is presenting the Superior Geotaverse Conference on Feb. 24 and 25. This is the fourth annual conference on the interdisciplinarity of Archean crust in Western Superior Province. Background data on this project is found in *Geoscience Canada*, Vol. 1, No. 3, pp. 21-29.

A conference volume incor-

porating the papers to be presented is being prepared. The conference fee, which is intended to cover the cost of a copy of this volume, will not exceed \$20.

For more information on the conference, to be held in the Mining Building, please get in touch with Prof. A.M. Goodwin of the Department of Geology, telephone 928-6375.

Prof. Kenneth Kee, chairman of the combined Departments of English, suggests a substantial increase in the number of high school students during the 1960s could have something to do with the matter.

"There was not an equal increase in the number of English teachers in the high school system at the time," Prof. Kee said. "The average teacher of English now has responsibility for about 180 students and, therefore, cannot devote much time to the individual student."

Prof. Kee also noted that it was generally believed at the university that high schools did not give their students an adequate grounding in grammar.

Don Rutledge, director of curriculum development for the Toronto Board of Education, said that universities have been scream-

Writing good English : pros & cons

Continued from Page 1

quality of writing are not unique to Canada, according to Czechoslovakian author and novelist, Joseph Skvorecky. When he started teaching English at Erindale College in 1969, he wasn't surprised to hear that a substantial number of students had difficulty writing what is commonly referred to as "proper" English.

"I have friends in Czechoslovakia who are teachers and they also complain about the standard of written English," their schoolmate, he explains. "This phenomenon seems to be common to all industrial societies which have well-formed media systems. Bureaucracies and the media tend to corrupt language through their use of the vernacular and lack of imagination in expression."

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Don Rutledge, director of the Toronto Board of Education, said that there is no relation between the teaching of formal grammar and the student's ability to write."

Prof. Baird finds that students have problems in comprehending what they read. "Students are becoming insensitive to words, it seems to me. I suppose television is partly responsible — students are reading less for entertainment."

Evelyn Cotter, director of the Innis College writing laboratory, echoes Prof. Baird's sentiments about comprehension. "We occasionally offer reading seminars and we get many students turning out for them. They complain that they can't keep up with their reading, so we try to develop their ability to read quickly while still achieving high comprehension."

University-school communication

Prof. Baird thinks the situation can only be improved if there is greater communication between the university and the high school. This, he believes, would have to involve a body like the Faculty of Arts and Science.

"I think a possible way to

realize this communication would be to give all first year students a writing test. In this way the University could evaluate the standard of writing and tell the high schools where the weaknesses are."

Mr. Rutledge is skeptical that any measures would substantially raise the standard of written English. "We have never had a society where a large number of the adults could write well. I believe it's a myth to think that this can be realized without a person's developing a good part of his time to writing."

Even the generation gap is being held responsible for this controversy about the quality of the written word, notes Prof. Kee. The argument is that language is always changing (with the introduction of new words and phrases, for example); there are some American educators, in fact, who believe students should be allowed to write as they speak.

Far out!

Final nominations for A & S Council

Nominations are open for positions on the general committee and other committees of the Arts and Science Council.

Nomination forms and a list of vacancies are available at the Faculty Office, 1006 Sidney Smith Hall; College offices and Departmental offices. These forms must be returned to the FACULTY OFFICE, no later than 4 p.m. Feb. 14. Forms received after that time will not be valid.

Do you know about black holes?

Holes at the David Dunlap Observatory.

The title of the 30-minute program is "Dead and Dying Stars" and Prof. Bolton will be sharing the air time with Jocelyn Bell, formerly of Cambridge University, who was the discoverer of Pulsars.

Prof. Tom Bolton of the Department of Astronomy will appear on David Suzuki's *Science Magazine* on CBC television (CBT channel 5, cable 6) on Monday, Feb. 17 at 10 p.m. to speak on his recent work on Black

COMING EVENTS

Items to be included in Coming Events must be received at the News Bureau, 45 Willow St., by 4 p.m. of the Friday before the issue of the *Bulletin* in which they are to be listed.

17 MONDAY

Seminars

"Slave Ants". Prof. T. Alloway, Department of Psychology. 4:174 Medical Sciences Building. 4:30 p.m. (Biology)

"Choline containing poly-saccharides and their biological activity". Dr. Alexander Tomasz, Laboratory of Microbiology, Rockefeller University, New York. 417 Best Institute. 2 p.m. (Banting and Best Medical Research)

Music

Organ recitals spring series: Charles Peaker. Convocation Hall. 5:05 p.m.

Theatre

The Noh Plays. Kita Troupe from Tokyo. Hart House Theatre. 8 p.m. Tickets \$6, students \$3. (East Asian Studies and Drama Centre)

18 TUESDAY

Lectures

Women at Noon series: "Schools", Fiona Nelson, past chairperson, Toronto Board of Education. The Cinema, Toronto Dominion Centre. 12 noon. (Continuing Studies)

"Relationships between Human and Experimental Demyelinating Diseases". Dr. E.H. Eytar, Department of Basic and Clinical Immunology and Microbiology, Medical University of South Carolina. 2172 Medical Sciences Building. 5 p.m. (Neurosciences Institute and Toronto Neurological Society)

19 WEDNESDAY

Lectures

"Elaboration of Collagen by Osteoblasts of Rat Alveolar Bone as Visualized by E.M. Radiograph". Dr. M. Weinstein, McGill University; R.S. McLaughlin Visiting Scientist, Room 111, Faculty of Dentistry, 124 Edward Street. 12 noon. (Continuing Studies)

First McFarland Lecture: "The rising capital cost of energy and mineral development". The Hon. Donald S. Macdonald, Minister of Energy, Mines and Resources. Auditorium, Medical Sciences Building. 5:15 p.m. (Applied Science and Engineering)

"Hiroshima: Were the Atomic Scientists Responsible?" Prof. Karl Hufbauer, Department of History, University of California, Irvine. 205 Library Science Building. 8 p.m. (IHPST and SGS)

1975 Winter lecture series: Time: "The Restless Earth: How the earth has been behaving for the past 4 billion years". Dr. J. Tuoz Wilson, Director General, Ontario Science Centre. ROM Theatre. 8:30 p.m.

Colloquia

"New Events in Reactions of Nitro Compounds". Prof. S.S. Novikov, Institute of Organic Chemistry, Academy of Sciences, USSR. 428 Lash Miller Chemical Laboratories. 4 p.m.

"On the Origin of Specialties: The Case of Chemistry in Enlightenment Germany". Prof. Karl Hufbauer, Department of History,

University of California, Irvine. 3163 Medical Sciences Building. 4 p.m. (IHPST and SGS)

Radio

"The Changing Concept of the Individual". CJRT-FM (91.1) 10 a.m. and 7:30 p.m. (Islamic Studies and Open Course)

20 THURSDAY

Lectures

"Copper Amalgam - Fact or Fiction". Dr. G.A. Reid, Department of Restorative Dentistry, University of Edinburgh; Visiting Associate Professor, Department of Crown and Bridge, Faculty of Dentistry, University of Michigan. Room 308, Faculty of Dentistry, 124 Edward St. 1 p.m. (Dentistry)

"LSI Applications in Digital Signal Processing". Daniel Hampel, Advanced Communications Laboratory, RCA Corp., Somerville, N.J. 9248 Galbraith Eulberg. 3 p.m. (SGS)

"Criteria for Living". Eberhard H. Zeidler of Craig, Zeidler, Strong/Architects. 157 Bloor St. W. 8 p.m. (Household Science Alumnae Association)

Seminars

"Structural Design of Non-rigid Pressure Airships". Prof. J.L. Duncan, Department of Mechanical Engineering, McMaster University. Main lecture hall, Aerospace Studies. 4925 Dufferin St. 1.45 p.m. (Aerospace Studies)

Major Approaches to Treatment series: "Medical Component of Alcohol and Drug Abuse Treatment". Dr. E. Sellers, Clinical Institute, Addiction Research Foundation. Auditorium, 33 Russell St. 12 noon.

"Progressive Traditionalism in 19th Century Russian Conservative Thought". Prof. Wayne Dowler, Visiting Lecturer, Department of History, Scarborough College. Upper Library, Massey College. 8 p.m.

Colloquium

"Interdisciplinary Breakthroughs: Nuclear Physics in Astronomy and Physiology". Prof. Karl Hufbauer, Department of History, University of California, Irvine. Debates Room, Hart House. 1:30 p.m. (IHPST and SGS)

Music

Popular music series. Carol Britto Four, Joyce Sullivan and Wally Koster perform music of the theatre. Bishop White Gallery. ROM. 5:30 p.m.

Film Reviews

"Film on education - 'Joy of Effort' at 7 p.m. 'The Sexes: What's the Difference?' at 8:30 p.m. and 'What They Want to Publish: Not What You Want to Buy' at 4 p.m. Room 107 Media Centre, 121 St. George St. These films are available all week; if unable to attend preview please phone: Audio-Visual Library, 928-6520, for alternate screening times.

21 FRIDAY

Colloquium

"Laser Studies of Mode-Mode Energy Transfer in Poly Atomic Molecules: Prerequisites for Infrared Photochemistry". Prof. G. Flynn, Columbia University. 138 Lash Miller Chemical Laboratories. 4 p.m. (Chemistry)

22 SATURDAY

Lecture

"Waterfall". Bill Carrick, African Section, Metro Toronto Zoo. Con-

vocation Hall. 8:15 p.m. (Royal Canadian Institute)

23 SUNDAY

Music

Scarborough College spring series of Sunday concerts: Canadian Electronic Ensemble with Gloria Grant, dancer, and Karen Keiser, pianist. Meeting Place, Scarborough College. 3:30 p.m.

Films

ROM Sunday family films: "The Ugly Duckling", "The Cow", "Pigs" and "NICK". ROM Theatre. 2:30 p.m. Free with Museum admission.

ROM Sunday evening films: "Three Looms Waiting". ROM Theatre. 7:30 p.m.

24 MONDAY

Lecture

Victoria College Public Lectures 1975: "Coriolanus and the Helmets of State". Prof. William Blissett, Department of English, University College. Lecture Hall, Room 3, Academic Building. 4:30 p.m.

Seminar

"Problems of Communication in Immunology". Prof. B. Cinader, Department of Immunology. 4174 Medical Sciences Building 4:30 p.m.

Conference

Superior Geotraverse Conference. Fourth annual conference on interdisciplinary study of Archean crust in Western Superior Province. Mining Building. Feb. 24 and 25 (See details page 3.) (Geology)

Music

Canadian Electronic Ensemble with Gloria Grant, Dancer, and Karen Keiser, pianist. Meeting Place, Scarborough College. 12:15 p.m.

Organ recitals spring series: Janet MacFarlane. Convocation Hall. 5:05 p.m.

25 TUESDAY

Lectures

Women at Noon series: "Women in Canada". Ceta Ramkhalawansingh, Instructor, Women's Studies. The Cinema, Toronto Dominion Centre. 12 noon. (Continuing Studies)

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"Leiden-Westerbork Investigations of peculiar Radio Galaxies". Prof. H. van der Laan, University of Leiden and chairman, Netherlands Foundation for Radio Astronomy; currently Instructor for Advanced Study, Princeton. David Dunlap Observatory. 4 p.m. (SGS and Astronomy)

"Indian Theatre Architecture in Relation to *Kutiyattam* Performance" with films of excerpts from 2 plays. Prof. Clifford R. Jones, Department of South Asian Art, University of Pennsylvania. Upper Library, Massey College. 4:15 p.m. (SGS and Sanskrit and Indian Studies)

Symposium

Neurological Sciences Symposium on Cerebrovascular Disease. Ossler Hall, Academy of Medicine, 5 p.m.

Poetry Reading

Abbott Anderson and Tom Marshall read their own poems. Room 28, Science and Medicine Library. 12:30 p.m. (Library)



Bronze doorknocker, *Venus Marina*, with Putti and Dolphins, has the lyre-shaped outline characteristic of those produced in Venice during the second half of the 16th century. From "Florentine Baroque Bronzes and Other Objects of Art" to Feb. 23, Exhibition Hall, ROM.

26 WEDNESDAY

Lectures

"Interaction of Librium and Cyclo Nucleotides: Correlation for anticonvulsant and anxiolytic action". Dr. E. Costa, Head, Laboratory of Preclinical Pharmacology, NIMH, Bethesda. Auditorium, Clarke Institute. 12:15 p.m.

"The Writer in Latin America: The Mexican Case", lecture in two parts, Feb. 26 and March 12. Prof. Jose Emilio Pacheco, Latin-American-Scholar-in-Residence. 2118 Sidney Smith Hall. 4:10 p.m. (Latin American and Hispanic Studies)

Nettie Douglas Fidler Lecture: "What is Nursing? Management function of clinical specialization". Dr. Margaret Scott Wright, Professor and Head, Department of Nursing Studies, University of Edinburgh. Cody Hall, Faculty of Nursing, 50 St. George St. 8 p.m. (Nursing Alumni Association)

1975 winter lecture series: "Biological Clocks", Prof. N. Mrosovsky, Department of Zoology. ROM Theatre. 8:30 p.m. (ROM)

Seminar

"The History of the Cakys of South India from inscriptions and literary sources". Prof. Clifford R. Jones, Department of South Asian Art, University of Pennsylvania. Seminar Room 1435, Roberts Library. 2 p.m. (SGS and Sanskrit and Indian Studies)

Colloquium

"Cognitive development". Dr. Sylvia Fishman-Digre, Department of Psychology, Carnegie-Mellon University. North Auditorium, OISE, 252 Bloor St. W. 4 p.m. (Psychology, OISE and SGS)

Victoria Women's Association Student Program, music and drama clubs, Wymondham, Victoria College, 150 Charles St. W. 2 p.m.

Radio

"Turkey - From World Empire to Nation State" CJRT-FM (91.1) 10 a.m. and 7:30 p.m. (Islamic Studies and Open Course)

27 THURSDAY

Lectures

"The Revolution of the Peking Opera and the Story of the Red Lantern". Prof. Chin-Chiang Hsia, Peking Normal University, Peoples Republic of China. 211 McMurchy Building, 12 Queen's Park Cresc. W. 4 - 6 p.m. (East Asian Studies)

"Primary French in the Balance". Dr. Ch. Bostick, director, National Foundation for Educational Research for England and Wales. Auditorium, OISE, 252 Bloor St. W. 5 - 7 p.m. (OISE)

"The Soviet and German Eugenics Movement of the 1920s". Prof. Loren Graham, Russian Institute, Columbia University. 205 Library Science Building. 8:30 p.m. (SGS and History)

Major Approaches to Treatment series: "What Can the Behavioral Therapist Offer the Alcoholic". Dr. Peter Keehn, York University, Auditorium, 33 Russell St. 12 noon (ARF)

"Pragmatic idealism in environmental impact statements". Dr. Reid Logie, chairman, Environment Assessment Panel, Environment Canada. 211 Haultain Building. 4 p.m. (IESE)

"Optical Alchemy and the Infrared Catalogue in Metals". Prof. C.P. Flynn, University of Illinois. 102 McLean Physical Laboratories. 4:10 p.m. (Physics)

"Progress Report: Research in the History of Horology". H.C. King, curator, McLaughlin Planetarium, 597 Sidney Smith Hall. 4 p.m. (IHPST)

Music for Pianists. 4 hands. Leo Smit, State University of New York at Buffalo, assisted by Claudia Hoca and Nils Vigelund. Walter Hall, Edward Johnson Building. 2:10 p.m.

Popular music series: John Arpin plays music of the cinema - Berlin, Gershwin and Porter. Bishop White Gallery, ROM. 5:30 p.m.